Maxwell Graduate School of Citizenship and Public Affairs

Syracuse University

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Quarterly Report, December 31, 1964

Work at the Maxwell School under the NASA Contract has continued in the two directions mentioned in the previous report, that is:
(a) ICP Case Studies in the area of science and government;
(b) research in science and government problems with the dual purposes of directly contributing to analysis of problems and, indirectly, strengthening faculty background for teaching of graduate seminars in or related to this field.

(a) CASE STUDIES PROJECT

The objective of the case study portion of this grant is the preparation by the Inter-University Case Program of six case studies concerning the formulation and/or execution of national science policies or programs. The preparation is based on files, other written materials and interviews with the principal actors concerned. Work on three case studies commissioned and in progress is as follows.

1. Roger A. Kvam: Communications Satellite Bill of 1962.
Since the last quarterly report Professor Kvam has rewritten part of the first draft of his case study and has been able to get in touch with one or two additional important primary sources of information. Material from these sources is being fed into the concluding sections of the first draft of his case study. The identification of new primary sources came about partly through assistance from Glennan of Case Institute of Technology.

2. Richard Chapman: The Decision to Go Operational with the TIROS Weather Satellite. During the past quarter Mr. Chapman moved to a base at the Brookings Institution in Washington and began an intensive study of background documentation available in the Department of Defense. At the request of the Director of Meteorological Programs of NASA's Office of Space Science and Application, a conference was held in December with Mr. Chapman and Professor Bock to consider a possibility advanced by OSSA that Mr. Chapman prepare, in addition to his regular case study, a special study of TOS. It was decided that after study of Mr. Chapman's working outline, NASA would consider the question of whether a separate study would be needed to serve its purposes. A detailed working outline of Mr. Chapman's project was submitted after the conference. The conference also discussed questions of access, clearance and the desire of Mr. Webb that case studies be undertaken of significant NASA operations so that the administration of these projects would be documented for specialists and scholars.

3. Michael Reagan: The Making and Implementation of Policy on the Moon Shots by the Jet Propulsion Laboratory in Pasadena. Professor Reagan has begun the preparation of a tentative outline study. He also began to develop a list of materials and persons to which access would be needed before the successful completion of his research.

Professor Bock conferred with several NASA officials concerning the identification of the three remaining cases that will form part of this project. He also interviewed Professor Alan Rosenthal of

Hunter College and three other possible case writers who are being considered by the ICP for work in the remaining studies.

(b) RESEARCH ON SCIENCE AND GOVERNMENT PROBLEMS: Professor Linton Freeman.

This research is designed as a logical analysis of the problems inherent in the screening of scientific research proposals. Modern scientific research often requires the expenditure of large amounts of money. Research proposals are, consequently, usually subjected to extensive screening ostensibly designed to maximize the probability of supporting "good" research. Most screening, however, is based upon procedures and criteria that are selected more or less arbitrarily. The long range consequences of alternative procedures and criteria have not been determined. It is the purpose of this research to explore some of the consequences for the development of science of several alternative procedures and criteria for screening research proposals. In this manner it is hoped that a rational system for screening proposals can be developed.

Work is currently being conducted on the development of a theory of screening. Basic input variables such as the proportions of proposals of various quality levels have been defined. Output variables will describe the proportions of various qualities of funded projects produced under different screening conditions. In this manner, rules are being developed to define the impact of alternative procedures and criteria for screening on the long-range and short-range quality of scientific production.

Simulation runs will be made in order to explore the consequences of a number of alternative theoretical systems. Their numerical results will then be compared with available data on funding procedures and results. Finally, the theory or theories showing the most promise

will be analytically solved to provide a rational basis for screening strategy. The final report will be a long article or short monograph. It will include (1) a formal statement of the theory, (2) a description of its fit to existing data, and (3) a set of suggestions for effective strategy.

(c) RESEARCH ON TECHNICAL, SCIENTIFIC, AND ADMINISTRATIVE INNOVATION WITHIN ORGANIZATIONS. Victor A. Thompson.

It is proposed to spend full time for one year investigating the problems associated with improving the scientific, technical, and administrative innovative capacity of modern organization. Although the focus of the project is chiefly in governmental organizations, it is thought that data from business and other private organizations will be equally valuable in lighting the way to solutions of some of these problems. Such questions as the following will be explored: (1) How does one assess the innovative record of an organization?; (2) How do organizations rationalize allocations of resources to research or any other innovative activities?; (3) Does organizational "success" or "failure" stimulate organizational innovation?; (4) What are the conditions most propitious for individual conditions?; (5) How do organizations provide, or fail to provide, these conditions?; (6) Are current organization structures (of the "bureaucratic" type of organization) optimal for innovation?; (7) How can organizations achieve structural flexibility so as to be able to alter themselves as problems and goals change?; (8) How are innovative behaviors motivated? What kinds of incentives are needed?; (9) What is the relation between professionalization and innovation?; (10) Has technical innovation been more prevalent than administrative innovation, and if so, why?

The results of the project will contain important information on adaptation and innovation in both existing and new organizations. The space age has ushered in a period of such rapid technological change that all organizations and sectors of the society will be required to adapt and change at a much more rapid pace than in the past. Organizations must learn how to be adaptive. Adaptation may soon be more important than control as a management objective. In the past, innovation in society rested on entrepreneurial activity in promoting through new organizations the results of individual inventors' inventions. Older organizations had to change to meet the new competition or perish. It seems that today both the inventive function and the entrepreneurial function must be performed, for the most part, within giant, bureaucratic, administered milieus. If the organization is to become responsible for innovation, we had better learn how to do it--i.e., it must become a matter of managerial concern and study.

On a limited budget, neither laboratory experiments, extensive observation, extensive interviewing, nor elaborate questionaire procedures are feasible. However, publication, unpublished theses and dissertations, unpublished business or government organization studies bearing on the subject will be surveyed in order to ascertain what has already been accomplished. This information will be supplemented where needed by inquiries, in person or by writing, directed to business and government organizations. The latter will require extensive correspondence, some travel and some long distance telephone communication. It is also planned to circulate drafts of the write-ups to appropriate persons in order to secure comments and criticisms.

The end result will be a modest-sized book and probably a series of articles from which reports to NASA can be prepared.